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Attachments:

DEPARTMENT OF COMMERCE
RESEARCH PERFORMANCE PROGRESS REPORT (RPPR)

[RPPR Guidance](#)
[Award Action Request Guidance](#)

AWARD INFORMATION	
1. Federal Agency: Department of Commerce / NOAA	2. Federal Award Number: NA17OAR4320152
3. Project Title The Cooperative Institute for Great Lakes Research (CIGLR): A Proposal to the Office of Oceanic and Atmospheric Research, NOAA, for a new Regional Research Institute	
4. Award Period of Performance Start Date: July 01, 2017	5. Award Period of Performance End Date: June 30, 2022
PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR	
6. Last Name and Suffix: Dick	7. First and Middle Name: Gregory
8. Title:	
9. Email: gdick@umich.edu	10. Phone Number 734-763-3228
AUTHORIZING OFFICIAL	
11. Last Name and Suffix: Gerard Jr.	12. First and Middle Name: Peter
13. Title: Asst Director Contract Administration	
14. Email: pgerard@umich.edu	15. Phone Number 734-763-3193
REPORTING INFORMATION	
Signature of Submitting Official: Kullie Kennedy	
16. Submission Date and Time Stamp: 2020-04-30 16:57:13.0	17. Reporting Period End Date: March 31, 2020
18. Reporting Frequency: <input checked="" type="radio"/> Annual <input type="radio"/> Semi-Annual <input type="radio"/> Quarterly	19. Report Type: <input checked="" type="radio"/> Not Final <input type="radio"/> Final
RECIPIENT ORGANIZATION	
20. Recipient Name: REGENTS OF THE UNIVERSITY OF MICHIGAN	

21. Recipient Address:

503 THOMPSON ST, ANN ARBOR, MI 48109-1340 USA

22. Recipient DUNS:

073133571

23. Recipient EIN:

386006309

ACCOMPLISHMENTS [Guidance](#)

24. What were the major goals and objectives of this project?*

The Cooperative Institute of Great Lakes Research (CIGLR) leads new research, trains the next generation of scientists, and turns research into action for safe and healthy Great Lakes communities. CIGLR was established in 2017 to accelerate NOAA's mission in the Great Lakes. CIGLR is hosted by the University of Michigan's School for Environment and Sustainability and is a partnership between NOAA's Great Lakes Environmental Research Lab (GLERL), and 12 universities, 4 NGOs, and 3 private businesses that

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25. What was accomplished under these goals?*

CIGLR made remarkable progress in each of its 4 research themes this period. Significant results are reported below:

Theme 1. Observing systems & advanced technology

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26. What opportunities for training and professional development has the project provided?*

CIGLR had a strong year offering employee training and professional development opportunities, in accordance with the CIGLR Employee Handbook that identifies expectations, evaluation processes, and career development resources.

Research Scientists are offered mentoring and development opportunities to help ensure their professional success.

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27. How were the results disseminated to communities of interest?*

CIGLR had a strong publication and presentation record this period that had high impact on our scientific peers. The science was complemented by the Outreach & Communications element of our ECO Program, which is designed to translate and disseminate our research outcomes to support informed decision making, increase interest in Great Lakes science careers, and promote a culture of Great Lakes stewardship. We estimate that our Outreach & Communications efforts have reached more than 1.3M

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28. What do you plan to do during the next reporting period to accomplish the goals and objectives?*

CIGLR's research portfolio and grant volumes have grown substantially over the past few years, leading to an increase in NOAA's funding cap for the institute. As such, our main goals in Years 4 and 5 are to expand the research institute through additional hires of principal investigators and scientific staff, and to grow the regional consortium of partners.

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PRODUCTS [Guidance](#)

29. Publications, conference papers, and presentations*

Nothing to Report ☐

CIGLR had a strong record of publication and presentation this period, with 36 peer-reviewed publications and over 100 conference presentations. Several publications were published in top journals and some received significant media attention. For example, the Alsip et al. paper in Freshwater Biology on invasive bigheaded carp was written up in a story by the Associated Press that was syndicated in newspapers across the US. Peer-reviewed publications, non-peer reviewed publications, and presentations

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30. Technologies or techniques*

Nothing to Report ☐

CIGLR's cutting-edge research is at the forefront of technology and methods development for advancement of Great Lakes science, with new developments this period that moved the needle on robotic cyanotoxin detection and produced novel laboratory techniques for measuring nutrient excretion by plankton and manganese concentrations in lake water.

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31. Inventions, patent applications, and/or licenses*

Nothing to Report ☒

See attached.

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32. Other products*

Nothing to Report ☐

In addition to scientific publications and presentations, CIGLR developed a number of other products this period to support NOAA's mission in the Great Lakes, including maps, models, outreach materials, and news articles. We submitted 7 proposals for \$4.2M of leveraged funding.

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PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

[Guidance](#)

33. What individuals have worked on this project?*

CIGLR Administration

Bradley Cardinale, Director, University of Michigan
Thomas Johengen, Associate Director, University of Michigan

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34. Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?*

Nothing to Report ☐

Changes in senior personnel during the reporting period include the departure of Associate Director and Research Scientist Dr. Thomas Johengen, who accepted a position as the Director of Michigan Sea Grant. Upon his departure, CIGLR developed a new administrative structure, with the goals of 1) improved communication and coordination of research with GLERL, 2) improved oversight and management of CIGLR projects and personnel, and 3) increased stability by adding redundancy of functions and

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35. What other organizations have been involved as partners?*

Nothing to Report ☐

Consortium lead investigators (CIGLR Council of Fellows reps):
Andrew Barnard, Michigan Tech
John Bratton, LimnoTech
Patrick Doran, Nature Conservancy

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36. Have other collaborators or contacts been involved?*

Nothing to Report ☐

Significant NOAA collaborators included:
Eric Anderson, GLERL
Philip Chu, GLERL
Ashley Elgin, GLERL

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IMPACT

[Guidance](#)

37. What was the impact on the development of the principal discipline(s) of the project?*

Nothing to Report ☐

With a research portfolio spanning the most pressing issues in the Great Lakes, CIGLR makes important contributions to the science and forecasts that protect life and property across the region. Advancements in coastal flood modeling, HAB dynamics, and hypoxia impacts were highlights during this period.

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38. What was the impact on other disciplines?*

Nothing to Report ☐

CIGLR makes significant contributions to other disciplines through our interdisciplinary expertise and mission to produce science outcomes for society. Research this period advanced the field of geodetics, improved tools for agricultural producers, and investigated social science aspects of Great Lakes natural resources.

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39. What was the impact on the development of human resources?*

Nothing to Report ☐

CIGLR strives to create a diverse workforce that is skilled in areas related to NOAA's research mission. We represent 63% of NOAA GLERL's scientific workforce, with 59 CIGLR employees collocated in the federal laboratory. Through our comprehensive ECO Program, we provided career training opportunities during this period for 18 postdocs, 29 graduate students, and 23 undergraduate students who will become the next generation of NOAA and Great Lakes scientists.

Spell Check

40. What was the impact on teaching and educational experiences?*

Nothing to Report ☐

CIGLR's contributions to teaching and education during this period included developing a network of 148 educators trained in Great Lakes science education, in addition to our career training and outreach activities that are part of our ECO Program.

During the reporting period, CIGLR subawarded a project titled "Using a Teacher Mentor Model to Expand the Impact of the Center

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41. What was the impact on physical, institutional, and information resources that form infrastructure?*

Nothing to Report ☐

CIGLR's Regional Consortium expands NOAA GLERL's research infrastructure by building strong partnerships with universities across the region who have agreed to share their facilities, vessels, laboratories, and instrumentation with NOAA, while our NGO and business partners help develop applications for NOAA research and bridge science with public interests.

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42. What was the impact on technology transfer?*

Nothing to Report ☐

CIGLR's contributions to technology transfer activities benefited research to applications at NOAA and served the public for a weather ready nation, including advanced HAB detection technology, operational HAB forecast development, coupled model development, and data assimilation techniques.

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43. What was the impact on society beyond science and technology?*

Nothing to Report ☐

As part of the Engagement element of our ECO Program, CIGLR reaches beyond the science community to interact with legislators, resource managers, and other stakeholders to identify their information needs, tailor research to meet those needs, and deliver the products needed for decision making. During this period, we provided critical Great Lakes information to legislators, engaged 513 stakeholders, and supported emergency flood response.

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44. What percentage of the award's budget was spent in foreign country(ies)?*

Enter percent %

Enter explanation :

During the reporting period, \$11,208 (0.07%) of the total CIGLR award to date (\$15,586,861) was spent in foreign countries. Travel expenditures (\$2,208, 0.01%) included lodging, food, and ground transportation (car rental) costs incurred by CIGLR research personnel for attending the 2019 International Conference on Aquatic Invasive Species in Montreal, Quebec, Canada. Additional foreign expenditures included a subaward (\$9,000, 0.06%) to Dr. Aaron Fisk at the University of Windsor (Ontario,

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CHANGES/PROBLEMS [Guidance](#)

45. Changes in approach and reasons for change*

Nothing to Report ☒

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46. Actual or anticipated problems or delays and actions or plans to resolve them*

Nothing to Report ☐

During the reporting period, project delays occurred due to delayed hires at both CIGLR and NOAA GLERL and delays in the timing of amendment awards, but work is on track for project completion during no-cost extensions.

CIGLR has received 85 amendments to our parent Cooperative Agreement award, including a \$10 million ceiling increase request.

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47. Changes that had a significant impact on expenditures*

Nothing to Report ☐

During the reporting period, four projects experienced an impact on expenditures due to staff departures or delays in hiring new/replacement staff. These include:

•HABs Monitoring, Forecasting and Genomics for the Great Lakes. Two research support staff and Postdoctoral Fellow Dr. Freya

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48. Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents*

Nothing to Report ☐

During the reporting period, 2 studies involving human subjects were conducted by CIGLR researchers: Knowledge Co-production in Effective Communication of Great Lakes Ice Forecasts, and Understanding Harmful Algal Bloom Forecasting Needs of Saginaw Bay Water Managers. The University of Michigan's Institutional Review Board (IRB) reviewed study methods, including interviews, focus groups, workshops, and surveys. The Knowledge Co-production study was designated as a non-regulated study.

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49. Change of primary performance site location from that originally proposed*

Nothing to Report ☒

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PROJECT OUTCOMES

[Guidance](#)

50. What were the outcomes of the award?*

In support of NOAA Strategic Goals, CIGLR's research is advancing Great Lakes science and promoting adaptive management through the application of novel techniques to understand environmental problems, prepare communities for environmental change, and develop tools for informed decision making. Through collaborations with NOAA GLERL and our Regional Consortium partners, we are at the forefront of coastal forecasting, high-tech observations, and ecosystem health research to serve the

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